WHAT IS CLAIMED IS:

1. An arc tube comprising:

an arc-tube body which incorporates a light-emission tube having a discharge space and pinch seal portions formed on two sides of said discharge space, said tube being made of a quartz glass; and

a pair of tungsten electrodes pinch-sealed to said pinch seal portions, respectively, such that leading ends of said pair of tungsten electrodes project into said discharge space, wherein

average roughness of a surface of each of said tungsten electrodes is 3 μm or smaller.

2. The method of manufacturing an arc tube as claimed in claim 1, wherein said tungsten electrode is subjected to a strong electroytic polishing process.

3. A method of manufacturing an arc tube, the arc tube including an arc-tube body, which incorporates a light-emission tube arranged to form a discharge space and has pinch seal portions formed on two sides thereof, the tube being made of quartz glass, and a pair of tungsten electrodes pinch-sealed to the pinch seal portions such that leading ends of the pair of tungsten electrodes project into the discharge space, said manufacturing method comprising:

inserting and disposing the tungsten electrodes, which have an average surface roughness of 3 μm or smaller, into portions of the tube in which the pinch seal portions are formed; and

pinch-sealing the portions of the tube at a temperature equal to or greater than 2000°C, thereby forming the pinch seal portions.

4. The arc tube as claimed in claim 1, wherein the average roughness is 2 μm or smaller.

5. The method of manufacturing an arc tube as claimed in claim 3, wherein the temperature at which the pinch seal portions are formed is equal to or greater than 2100°C.